

1/6/16 "A mistake is food for a new invention." -Anonymous

HW: "Domain Algebraically" w/s
Test 3 on Tuesday 1/17

AIM: How do we find Domain Algebraically?

Warm Up:

1) What situations do we have restrictions on the values that x can be?

When we have a fraction
with x in the denominator.

When we have a variable
under a radical.

Situations to consider Domain:

- 1) Fraction: Set denominator = 0
and solve for the variable.
These values are NOT part of the domain.
- 2) Radical: Set the radicand (whats under $\sqrt{\quad}$)
to be ≥ 0 and solve.
- 3) Fraction with a radical in the denominator:
Set radicand to be > 0
and solve.

II. Find the **domain** of each

1. $y = \frac{1}{x-3}$ $\frac{x-3=0}{+3 \quad +3}$
 $x = 3$
 Domain: $\{x \mid x \neq 3\}$
 $(-\infty, 3) \cup (3, \infty)$

A1+:
 $\frac{x-3 \neq 0}{+3 \quad +3}$
 $x \neq 3$

2. $y = \frac{5}{x^2-4}$
 $x^2-4=0$
 $(x+2)(x-2)=0$
 $x=-2 \quad x=2$

Domain: $\{x \mid x \neq \pm 2\}$

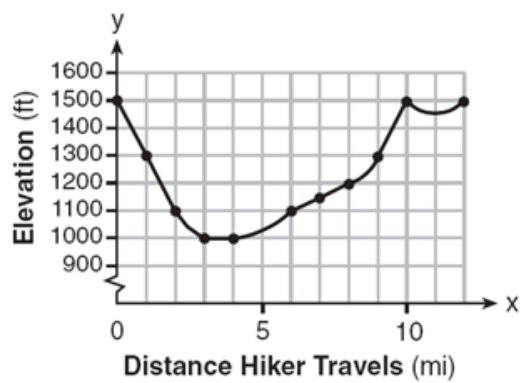
5. $y = \sqrt{x-5}$
 $\frac{x-5 \geq 0}{+5 \quad +5}$
 $x \geq 5$

$\{x \mid x \geq 5\}$

6. $y = \frac{5}{\sqrt{x-3}}$ $\frac{x-3 > 0}{+3 \quad +3}$
 $x > 3$

III.

- 1) The accompanying graph shows the elevation of a certain region in New York State as a hiker travels along a trail.



What is the domain of this function?

- | | |
|-------------------------------|------------------------|
| (1) $1,000 \leq x \leq 1,500$ | (3) $0 \leq x \leq 12$ |
| (2) $1,000 \leq y \leq 1,500$ | (4) $0 \leq y \leq 12$ |